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The Honorable Philip Isenberg, Chair, and Council members
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January 28, 2011

This letter is in response to the Notice of Preparation for the Delta Plan Environmental Impact Statement.

Page 25 of the NOP mentions an analysis of Carbon Sequestration and Greenhouse Gas Emissions – Climate Change and p. 26 mentions Energy Resources. I believe this is with respect to proposed changes in Delta land use. However, other aspects of the Delta Plan also have significant effects on energy use and greenhouse gas emisssions. In particular, the development of new conveyance facilities, and changes in the operation of both the State Water Project and the Central Valley Project could have significant impact on the energy use of the water projects, and greenhouse gas emissions from these operations.

Water is a significant source of embedded energy consumption in the state. The staff report on California's Water-Energy Relationship (prepared for the California Energy Commission as part of the 2005 Integrated Energy Policy Proceeding) found that the total water-related energy use in the state was 48,000 GWh of electricity, and 4.2 billion therms of natural gas [1] This was 19% of all electricity used in the state, and 32% of non-generational natural gas use.

The report estimated that in 2001, water supply, conveyance, distribution and treatment used about 10,742 GWh of electricity, or 22% of total water-energy use in the state.

However, the estimates in the 2005 CEC report were based on very conservative assumptions. A more recent study for the California Public Utilities Commission showed that the actual numbers are likely to be much higher. In 2010, a study team from GEI Consultants and Navigant Consulting reviewed the data used for the 2005 CEC report, and found differences between the data reported by nine wholesale water agencies and the estimates in the CEC energy consumption database. The study team recommended adjustments which resulted in an 80% increase in the estimates for total energy use for water supply, conveyance, and treatment – to about 18,098 GWh.[2]

The new study showed that conveyance of project water was about half of this total. In 2001, the State Water Project used 6,352 GWh of electricity, and produced 1,933 GWh of electricity from

hydropower. The net energy consumption of the State Water Project was 4,420 GWh of electricity.. The Central Valley Project used 833 GWh of electricity, and the Colorado River Aqueduct used 2,483 GWh of electricity. The total energy used for conveyance was 9,718 GWh, or 7,401 GWh net of hydropower generation.

These numbers mean that long-distance conveyance alone is a significant percentage of total electricity used in the state – about 4% in 2001. The State Water Project has been a net consumer of electricity for many years, and has needed to supplement hydro power with electricity from fossil fuel-based power plants.

The proposed new conveyance in the Delta and associated changes to State Water Project operations involve significant additional pumping, which could greatly increase the total electricity used, and total greenhouse gas emissions from the pumps in the Delta.

One can get a rough estimate of the additional electricity used by new conveyance by looking at the 2005 CEC report figures for current electricty use for pumping by the State Water Project. These range from 0.7 MWh per acre foot at Dos Amigos to 3.2 MWh per acre foot at Devil Canyon.

If one assumes the new isolated conveyance would use as much electricity as the first stage of the State Water Project at Banks, then the addition of the new conveyance could result in another 1500 GWh to pump the 2000's average of about 5,000,000 acre feet of SWP and CVP project water. Increasing exports above the average for the past decade would use another 1.4 MWh – 3.9 MWh per acre foot – or 1,400 GWh to 3,900 GWh for each additional million acre feet.

It's easy to see that simply adding a new conveyance facility and pumping an additional two million acre feet of water for both the SWP and CVP could almost double the current net electricity use for conveyance of water in the state.

In addition, AB 32 caps greenhouse gas emissions at 1990 levels by 2020. For the State Water Project, simply continuing current average export levels could mean mitigating for an average increase in pumping of about 500,000 acre feet from the Delta between 1990 and 2000-2009.

Other changes in the sources of water for both urban and agricultural users dependent on imported water have also resulted in significant increases in energy use, which may not have been addressed Since the state Drought Water Bank in 2009, water transfers from the Sacramento and San Joaquin Valleys have been a significant alternative source of water for South of Delta water agencies The Department of Water Resources is currently preparing an EIS for long-term transfers of up to 600,000 acre feet of water from the Sacramento Valley. Many of these transfers are groundwater substitution transfers; groundwater pumping takes significant energy. The CPUC report study team estimated that groundwater pumping used about 6,068 GWh of electricity per year in 2001, only slightly less than the net use of the State Water Project, Central Valley Project, and Colorado River Aqueduct combined. The total energy use may have increased significantly with increased reliance on active management strategies, including groundwater substitution transfers, and groundwater bank infiltration and extraction.

Unless the State Water Project develops massive new sources of clean energy, these current and future changes in operations will result in increased greenhouse gas emissions from fossil-fueled power plants.

The simplest strategy to reduce greenhouse gas emissions is conservation and a reduction in reliance on water conveyed long distances, or on other energy-intensive sources of water, such as groundwater substition transfers. Environmental groups have urged the Delta Stewardship Council to evaluate a strategy that reduces Delta exports and develops local sources of water. The resulting savings in electricity and greenhouse gas emissions should be evaluated as well.

Other proposed alternatives include new conveyance that will continue or increase exports of water from the Delta and the Sacramento Valley. These alternatives would require active mitigation strategies for increased energy use and greenhouse gas emissions, which should be part of the planning and evaluation of the proposed projects.

Mitigation of the energy impacts of water use in the state has been studied by the Water-Energy subgroup of the state's Climate Action Team (WET-CAT.) One of the current proposal by WET-CAT for mitigating greenhouse gas emissions embedded in water use is the "20 by 2020" urban conservation initiative.[3.]

While "20 by 2020" is expected to reduce per-capita water use by urban consumers, the proposed reductions may not achieve an absolute reduction in greenhouse gas emissions, because the water saved is expected to go to supply new customers in the water districts. So at best the "20 by 2020" plan will slow the increase in GHG emissions.

Another initiative studied by WET-CAT is to increase the use of recycled water by 250,000 acre-feet per year by 2020, and an additional 250,000 acre-feet per year by 2030. Full implementation of this initiative is projected to save 627 GWh by 2020 and 1,254 GWh by 2030.[4] This could partially mitigate the increased greenhouse gas emissions from the proposed changes in operations.

In addition, with respect to the Notice of Preparation on p. 26, "Economics" and p. 27 "Hazards and Hazardous Materials," any analysis of risks to the state's water supply system should not only include long-term risks of sea level rise, but shorter term risks from dependence on energy derived from fossil fuels. This includes risks from price shocks as well as from geopolitical instability. The long term solvency of operations of the State Water Project should also be evaluated under the different scenarios, given the projected increases of 50% in the cost of electricity by 2030.

Sincerely

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1 . California's Water – Energy Relationship, Final Staff Report, November 2005, California Energy Commission, CEC-700-2005-011-SF.
http://www.energy.ca.gov/2005publications/CEC-700-2005-011/CEC-700-2005-011-SF.PDF

2 . Embedded Energy in Water Studies. Study 1: Statewide and Regional Water-Energy Relationship, Prepared by GEI Consultants/Navigant Consulting, Inc.for the
California Public Utilities Commission Energy Division, August 31, 2010
http://www.calmac.org/publications/CALMAC_CA_Statewide_Regional_Water-Energy_Vol_15_of_15_-_Appendix_N.pdf

3. Near-Term Implementation Plan, Measure W-1 / Water Management
CAS Strategy 3: Aggressively Increase Water Use Efficiency
Climate Action Team Water-Energy (WET-CAT) Working Group
http://www.climatechange.ca.gov/climate_action_team/reports/catnip/water_energy/Water%201%20-%2020x2020%20Reduction%20CATNIP.pdf

4 Near-Term Implementation Plan, Measure W-2/Water Recycling, Climate Action Team Water-Energy (WET-CAT) Working Group
http://www.climatechange.ca.gov/climate_action_team/reports/catnip/water_energy/Water%202%20-%20Water%20Recycling%20CATNIP.pdf